

**METHODS OF USING CHEMICO-MECHANICAL MICROVALVE DEVICES  
FOR THE SELECTIVE SEPARATION OF COMPONENTS FROM MULTI-  
COMPONENT FLUID SAMPLES**

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**ABSTRACT OF THE DISCLOSURE**

Methods for selectively separating at least one component from a multi-component fluidic sample are provided. In the subject methods, the fluidic sample is introduced into a micro-fluidic device that includes at least one micro-valve made up of a phase reversible material. The multi-component fluidic sample is then contacted with the microvalve in a microfluidic device under conditions sufficient for the at least one component to enter the microvalve, while the remaining constituents of the fluidic sample remain outside of the microvalve. Also provided are kits for use in practicing the subject methods, where the kits include at least a microfluidic device having a microvalve and instructional material (or means for obtaining the same) on how to use the device in the subject methods. The subject devices find use in a variety of applications, including sample desalting and concentration applications.